

ART 34 AMDT

21

CLAIMS

1. A hydrocarbon synthesis process comprising the conversion of a feed of  
H<sub>2</sub> and at least one carbon oxide to hydrocarbons containing at least 30%  
on a mass basis hydrocarbons with five or more carbon atoms (hereinafter  
referred to as C<sub>5+</sub> compounds); the conversion being carried out in the  
presence of an alkali metal promoted iron hydrocarbon synthesis catalyst  
and an acidic catalyst suitable for converting hydrocarbons; and the  
process being characterised therein that the reaction mixture formed  
during the conversion contains less than 0.02 mol alkali metal per 100g  
iron and that the H<sub>2</sub> : carbon oxide molar ratio in the feed of H<sub>2</sub> and carbon  
oxide is at least 2.
2. The process of claim 1 wherein the synthesised hydrocarbons contain at  
least 40% on a mass basis C<sub>5+</sub> compounds.
3. The process of either one of claims 1 or 2 wherein the hydrocarbon  
synthesis process comprises a high temperature Fischer-Tropsch process.
4. The process of any one of the preceding claims wherein the at least one  
carbon oxide in the syngas comprises CO.
5. The process of claim 3 wherein the alkali-metal promoted iron  
hydrocarbon

synthesis catalyst comprises a Fisher-Tropsch catalyst.

6. The process of claim 5 wherein the promoter comprises potassium or sodium oxide.

7. The process of any one of the preceding claims wherein the acidic catalyst comprises a zeolite.

8. The process of claim 7 wherein the zeolite comprises a HZSM-5 zeolite.

9. The process of any one of the preceding claims wherein the hydrocarbon synthesis catalyst and the acidic catalyst are contained on separate particles.

10. Hydrocarbons produced by the process of any one of claims 1 to 9.

11. The use of a hydrocarbon synthesis process for the conversion of a feed of  $H_2$  and at least one carbon oxide to hydrocarbons containing at least 30% on a mass basis hydrocarbons with five or more carbon atoms (hereinafter referred to as  $C_{5+}$  compounds), the process comprising converting a feed of  $H_2$  and at least one carbon oxide to hydrocarbons in the presence of an alkali promoted iron hydrocarbon synthesis catalyst and an acidic catalyst suitable for converting hydrocarbons; and the

ART 34 AMST

23

process being characterise therein that the reaction mixture formed during the conversion contains less than 0.02 mol alkali metal per 100g iron and that the  $H_2$  : carbon oxide molar ratio in the feed of  $H_2$  and carbon oxide is at least 2.

5

10

15

20